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AUTHOR Lawless, Robert W.; And Others
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ABSTRACT

An accreditation self-study was conducted by the University of Houston Central Campus. In the process of establishing the academic priorities for departments two dimensions were assessed: the current quality of the academic programs and the centrality of each program to the stated mission of the college under which it was housed. Based upon a two-dimensional matrix of current quality and centrality, departments were recommended to merge with a more central department, to have their programs transferred to another campus within the system, or to be terminated. This initial matrix, that had a 4 x 4 design, was reduced to 3 x 3 matrix when the inadequate and non-central components were eliminated. The "current quality" dimension of the matrix was also replaced with an "aspired-to quality" (for the next five-year period). A cost-resource matrix for determing needs of each department was also designed. Departments were categorized according to principal level of instruction provided, principal consumers of the instructional service, and the overriding format of instruction within the department. Undergraduate departments should generally be capable of operating at lower resource levels than graduate departments, all other things being equal. A service department could be expected to have larger classes and lower operating expenditures than discipline-based departments. Each department can be assigned a cost index on the basis of the multipliers assigned to its designators. This model provides a consistent approach to resource allocations within the framework of academic goals and priorities. (SW)

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Robert H. Fenske
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LINKING ACADEMIC PRIORITIES TO RESOURCE DECISIONS

ROBERT W. LAWLESS, MARILYN WRIGHT, DOUGLAS J. WRIGHT

The era of scarcer educational resources and increased demands for institutional accountability has brought both to educational administrators and their various constituencies a growing appreciation for the management philosophy that plans are merely translations of organizational priorities to operating terms. The goals and priorities which underly plans articulate the opportunities perceived by the institution to move closer to fulfillment of its mission, however defined; plans detail the means by which these opportunities may be seized and, in the fullest sense, exploited. Caught in the cross-pressures to do more with relatively fewer resources, and to adequately justify and account for the utilization of these resources to a variety of frequently-adversarial constituencies, educators have increasingly come to view the most meaningful plans of their institution to be those expressed through its resource allocation process and operating budget - that is, the institution's fiscal translation of its educational goals and priorities. Yet, the same pressures which require intense self-involvement with the resource allocation process all too frequently overlay this process with an unhealthy shroud of institutional politics, or so ensnare it with bureaucratic constraints and endless paperwork that the process loses whatever sensitivity to academic mission it might have entailed, with the end result - the operating budget - bearing little discernible relationship to enunciated institutional goals and priorities.

Not surprisingly, the opportunity for discovering and implementing a means of bringing the requisite order to the resource allocation process without losing sight of institutional goals may present itself as the outgrowth of some other fundamentally-important process imposed upon the institution. Such an opportunity presented itself to the University of Houston Central Campus as the result of the institutional accreditation self-study required by the Southern Association of Colleges and Schools in 1975. By explicitly opting to conduct a non-traditional, highly-intensive self-study, the University gave itself the chance to rise above the short term immediacies of its operations to objectively reevaluate and redefine its institutional mission, reappraise its financial and physical capabilities, and - most importantly - determine the role to be played by each of its disciplines and their respective programs in successfully fulfilling the multi-various demands of its mission. By intimately involving a broad delegation of faculty, administrators, students, alumni and friends in the self-study process, it was possible for the first time to comprehensively evaluate the appropriateness of academic program goals, and to establish for each both a current assessment of relative quality and a quality goal to which to aspire over the next five-year planning period. Not

trivially, by requiring submission of standardized data packages and by utilizing consistent measurement criteria, these assessments could be conducted in an environment relatively free of gamesmanship. What emerged from this process was a first attempt at placing within a consistent framework the explicit academic priorities with which to guide the subsequent allocation of budget resources to academic units.

The process of establishing the academic priorities for departments resolved itself to one of assessing the department along two dimensions: the current quality of its academic programs, and the centrality of each program to the stated mission of the College under which it was housed. The 14 factors considered in arriving at these assessments are found in Exhibit 1. A word of explanation may be in order regarding the term "centrality." Centrality as used here can best be defined as the extent to which fulfillment of the College mission is dependent upon the scope, priorities and quality of the program in question. It is interesting to note that those factors which most heavily influenced the assessment of centrality tend to be much more stable and less susceptible to change than those principally impacting the assessment of program quality. It should also be noted that while centrality and quality assessments can be independently conducted, there is a signficant degree of interrelatedness.

After each program had been assessed as to centrality and current quality, these assessments could then be merged on the basis of institutional goals to arrive at a composite departmental assessment along each of these dimensions. Thus, it was possible to construct a two-dimensional matrix of columns i and rows j, the columns representing degree of departmental centrality to the institutional mission, and the rows representing perceived departmental quality. In our case, the matrix which resulted was one 4 X 4, with centrality broken into High, Moderate, Peripheral and Non-Central categories; and quality broken into Eminent, Strong, Adequate, and Inadequate categories on the basis of prevailing national standards at doctoral-granting institutions (Exhibit 2).

Based upon such a matrix, it was then necessary to determine the future of departments falling into the lower extreme categories (Non-Central, regardless of perceived quality; and Inadequate quality, regardless of degree of centrality). In the former, departments were recommended to be merged with other, more central departments; to have their programs transferred to another campus within the University System; or to be terminated entirely. In the latter, recommendations were made to discontinue or place under moratorium selected degree programs offered by the department, thus shifting the overall quality appraisal upward; or to do away with the departmental degree programs altogether, thus effectively phasing out the

department over time. The net result was a reduced matrix of size 3 X 3 into which all continuing departments could be mapped.

Having established this 3 X 3 matrix representing current assessment, it was then possible to replace the "current quality" dimension with one representing "aspired-to quality" (that level of quality which it was anticipated could be attained or maintained by the department over the next five-year period.) Exhibit 3 shows the numbers of departments which were ultimately fitted into each of the nine cells of this matrix. It is interesting, if not surprising, that the departments included in this aspirational quality assessment which were slotted for the highest qualitative development tended to be highly central as well. The inverse was also true for the lowest categories of quality and centrality.

This matrix, then, represented a concise statement of the overall academic priorities assigned to the respective academic departments. In order to be meaningful in the process of allocating resources to these departments, however, the matrix had to be taken further so that it would express not only relative academic priority but relative financial need as well. That is, financial priorities had to be superimposed upon academic priorities to arrive at a sound basis for allocation - or reallocation - of scarce funds.

This process of determining resource needs (given an aspirational level of quality to be attained) required both an assessment of current resource utilization within the department and establishment of a benchmark index to which resource levels were to be raised (or might be lowered). The approach we utilized was to superimpose upon each cell of the academic priority matrix a second matrix, this one three-dimensional, representing the relative cost/resource need categorizations of each department. Composed of 2 rows, 2 columns, and 4 depth intervals, these represented, respectively, the principal level of instruction provided by the department; the principal consumers of this instructional service; and the overriding format of instruction within the department.

The two levels of instruction used to categorize departments were undergraduate and graduate. It should be noted that a third, intermediate level - advanced professional - could have been used but, because of the additional complexity this would introduce, was not. To determine the instructional level into which the department was to be placed, two factors were considered: the percentage of departmental majors whose degree objective was at the graduate level; and the percentage of semester credit hours generated at the graduate level in a typical semester. Selection of appropriate bisecting percentages is an arbitrary matter, but can be assisted by determining the percentage of graduate students and graduate-level semester credit hours for the institution as a whole, and by arraying departments on these percentages to determine modal ranges. In the instance of the University

of Houston Central Campus, breakpoints selected were 25% of majors, and 20% of semester credit hours produced. That is, if a department had both 25% of its degree-objective majors pursuing graduate degrees, and 20% of its semester credit hours accounted for by graduate courses, it was categorized as a graduate-level department; if one or the other, or both, criteria were not met, the department was depicted as an undergraduate department. Advanced professional departments were categorized as undergraduate departments if they offered undergraduate degree programs as well; as graduate departments otherwise.

Departments were also categorized as to the consumers their courses served. Departments heavily concerned with the instruction of their own or collegially-related majors were designated as discipline-based departments. (Other majors within the College were included because many colleges have such highly-structured, broad-based, intra-college curricular requirements that frequently little choice of elective options is given.) Those providing significant levels of instruction to majors other than those in their colleges as a means of assuring some common thread of general education for all students were designated service-based departments. Once again, determination of the institutional norms for this factor were necessary in selecting an appropriate breakpoint. Ultimately, it was decided that if a department generated at least 25% of its semester credit hours from other than college majors, and over 50% from other than its own majors, it would be designated a service department for these purposes; if over 75% of its hours were accounted for by College majors, and at least 50% by departmental majors, the discipline-based designation would be given.

Finally, each department was categorized as to its fundamental instructional format, based largely on the consumable supplies its operating expense budget went toward purchasing. Four categories were utilized: Instructional, if the most significant supplies expenses were for "paper and pencil" items; Artistic, if these expenditures were most commonly for supplies or fixtures to support creative works and, thus, more costly than the Instructional category; Technical, if this were largely for supplies and equipment to support development of specialized, technical student skills; and Research, if the most significant expenditures were to purchase equipment, chemicals or other laboratory supplies for purposes of training students in empirical research. This analysis of expenditure data (and historical documentation for budget requests) was further refined by evaluation of the nature of courses which were predominant in the instruction offered by each respective department.

Exhibit 4 shows the resultant matrix of cost characteristics. This matrix represents a basis upon which to construct a departmental resource index, against

which actual resource levels might be measured. Resources might further be divided into personnel (faculty, clerical staff and other staff), operating expenses (supplies, equipment, travel, telephones, and so forth) and facilities (special-usage rooms, general classrooms, office space, and so on). Because the University of Houston does not allocate facilities monies to academic units, our analysis dealt only with the first two categories of resources.

Undergraduate departments should generally be capable of operating at lower resource levels than graduate departments, all other things being equal. That is, an undergraduate department would require fewer faculty (and, hence, fewer clerical and other support staff) than would a counterpart graduate department. Thus, the student/faculty and student/staff ratios can be higher for an undergraduate department than for one conducting significant graduate instruction. Because staffing resources may be lower, so can those expenditures for operating support on a per-unit basis, i.e., per semester credit hour, per student or per faculty F.T.E.

Similarly, a service department could be expected to have larger classes on average, resulting in a generally higher student/faculty ratio than that for a discipline-based department, all other things being equal. Likewise, both because of certain economies of scale and because of the generally lower staffing needs, service department operating expenditures per unit should be somewhat lower than those for a corresponding discipline-based department.

Finally, Instructional departments - those offering predominantly lecture/discussion courses - should be both the least labor-intensive and the least costly in terms of expendable supplies and equipment; conversely, Research departments may be expected to be the most labor-intensive and the most costly per unit of output in terms of equipment and supplies. Both Artistic and Technical departments would fall into the resource interval between Instructional and Research departments.

Based on all of these factors, the least costly departments - both in terms of personnel and supplies - should be those designated as Undergraduate - Service - Instructional departments, with the most costly being those characterized as Graduate - Discipline - Research departments. But how much more costly in per-unit terms should one set of designators be than another, different set?

The short answer is that it varies. While falling short of the precision desired, this answer concisely puts the point that, in arriving at one more acceptable, judgment (hopefully informed judgment) must play a part. Our approach was to develop a multiplier for each of the department designators, with the lowest-cost designator in each of the three categories being assigned 1.0 as its multiplier. The greatest advantage of this approach is that an institution may effectively

weight its overall index by assigning relatively greater multipliers to a particular type of designator, or to a specific designator within type. Thus, if the dichotomy between graduate and undergraduate teaching is deemed to be the most important aspect involved in resource claims, an institution can apply a very high multiplier to graduate departments to reflect this sense of priority.

In any event, each department can be assigned a cost index on the basis of the multipliers assigned to its designators which is entirely consistent with the index of each other department, and which reflects the best judgment of the institution as to relative resource claims of each set of designators. By analyzing the actual budgeted or expended cost of each department per selected unit of measure (SCH, FTE faculty, FTE students, etc.), these departmental indexes can be verified and instances of wide variance singled out for special attention.

An example should clarify the use of the multiplier in arriving at cost indexes for departments. Assume an institution with five departments, of which two are Undergraduate - Discipline - Instructional, one is an Undergraduate - Service - Research, one is a Graduate - Discipline - Artistic, and one is a Graduate - Discipline - Instructional. Multipliers are as follows:

1.0 for Undergraduate, Service, Instructional
1.5 for Discipline, Artistic
2.0 for Graduate
3.0 for Research

The indexes for the first two departments would thus be 1.5 (1.0 X 1.5 X 1.0); for the third 3.0; for the fourth 4.5; and for the fifth 3.0; the total index for the institution would be the sum of these departmental indexes, 13.5, and the mean would be 2.7. Thus, if the institutional average total cost per unit produced (say, per credit hour) was $5.00, we would expect the cost per credit hour in each of the first two departments to be approximately $2.75 (1.5/2.7 X $5.00), the cost per credit hour in the fifth department approximately $8.35, and so forth. By dividing the actual figure for the department by the expected value, we can arrive at a percentage figure which represents the degree to which resource needs are being met; that is, a financial priority.

Wide variance from these expected values, particularly if generalized rather than exceptional, could indicate one of several things, most notably: (a) the multipliers utilized are not appropriate; (b) the factors being utilized as departmental designators are inappropriate or inadequately portray subtle departmental differences; (c) the measurements used to assign departmental designators are inappropriate or inadequate; or (d) historical allocations of resources have been less reflective of real costs than of political persuasiveness, calling for a fundamental reallocation of resources to more sensitively recognize needs of de-

partments.

We took the concept of indexing a step further by ascribing to each designator a normative ratio for each particular resource type per unit of measure. For example, on the basis of mean and median ratios of student majors to F.T.E. faculty for each format and level of instruction (and using some judgment of national norms), a normative ratio was developed which seemed to describe the desired ratio to be attained by departments with that particular format, type and level of instruction. Similar approaches were used to develop norms for the numbers of clerical, technical and administrative staff, and for operating expense funds, to be ascribed to each set of departmental designators. By then comparing actual departmental ratios to these norms, we ultimately had available both an assessment of the overall adequacy of resources for the department (using the multiplier indexes), and an internal assessment of the appropriateness with which funds are being utilized (using the normative ratios). In this way, departments having an apparently adequate overall financial base might be deemed to distribute these monies inappropriately (i.e., too many faculty but too few secretarial full-time equivalencies). Likewise, inadequate or overabundant overall budget bases might not imply an inadequacy or overabundance of each resource type.

Reallocation - as well as allocation of available incremental funds - requires merging the cost indexes and ratio analyses of departments with their respective academic priority as reflected in the initial matrix. Thus, allocation priorities must jointly recognize the academic priority of the department - which describes the intensity or timeliness with which its goals are to be pursued - and its financial priority - best describing the difference between the actual resource base of the department and that which would be expected given its cost/resource index. By initially considering departments with the highest academic priority (Highly Central, Goal of Eminence), and by ranking them according to their relative financial priorities, it is possible to derive a descending order of allocation priorities within that cell. By successive cells, each department having a given academic priority can be ranked relative to its counterparts as to its allocation priority.

There will doubtless be occasions when a department occupying a relatively low academic priority will demonstrate such a pressing financial need that it must be "leapfrogged" up the composite resource allocation priority list. Once again, judgment is necessary here to determine at what point such action is appropriate to the overall task. We suggest the use of transition points to guide these decisions, a transition point being that comparative level of poverty which entitles a department occupying a specific cell of the academic priority matrix

to ascend above a department occupying a higher-priority cell. These transition points need to be established for both axes of the academic priority matrix to assure that a department can move upward both with respect to higher-centrality and higher-quality departments having significantly lower financial priorities.

Two major drawbacks should be obvious at this stage: the data being utilized to determine the departments' resource adequacy, upon which we have based its resource allocation priority, are part and parcel of its current quality level, not that level necessarily aspired to; and the data and measures which describe both the index and the departmental cost/resource characteristics are internally consistent, but not necessarily comparable to national norms. A word about each of these points.

It is important to have both internal and external comparative data with which to work, particularly in determining whether budgeted and expended amounts per unit of output are reliable measures of national norms. (How many times are we all confronted by blithe statements like, "Sure, I get more for my department (College) than that other dean, but you're comparing me to the wrong people. I'm no where near the national average for schools of transcendental meditation."?) It is normal that internal data would be developed first since they are readily available and easily evaluated. Ideally, each institution utilizing this type of model would also have available good, comparable figures for several "peer" institutions, as well as for a selected few of the very best institutions nationally.

Peer data can be used to validate the appropriateness of the measures and multipliers utilized internally, as well as to give some fix on the budgetary or expenditure norms for similar departments or schools. The data from the best institutions can give us the upper bounds for these figures, thus helping to establish a range of values within which the figures for our own departments should be expected to fall. If a department is targeted to move from one quality level to another over the planning period, the costs which can be expected to be incurred in moving it up the quality scale can be estimated with a high degree of confidence. We at the University of Houston are currently involved in putting together such an interinstitutional data exchange for just these purposes.

The use of interinstitutional data has a second salient quality. Cost of living indexes and other confounding considerations aside, the data may shed light on subtle but important departmental differences with respect to resource adequacy. If, for example, your institution as a whole is significantly underfunded vis'-a-vis' your peers, this should be reflected throughout the interinstitutional comparison of similar departments. However, the effects may not be uniformly distributed. If, as a whole, your institution is funded 20% lower than the norm for peer insti-

tutions, but Department A is only 5% below the norm for comparable departments at peer institutions, you might conclude that Department A is well funded relatively speaking.

While this model has weaknesses, it does at least provide the basis for a rational and consistent approach to resource allocations within the framework of academic goals and priorities. However, resource allocation does not of its own assure performance. It is important to periodically review the rationale underlying assignment of quality goals and overall academic priorities, and to measure movement toward these goals in the form of program reviews. Such reviews should occur frequently enough to establish the validity of their use, but not so often that they impose a bureaucratic hardship on the academic departments. Reviews can be rotated to ease staff burdens, with higher-priority departments reviewed at shorter intervals than those with lower priorities.

Reviews of the financial and workload ratios used in establishing the departmental resource indexes should be conducted annually, both because they highlight shifts in the uses of resources and because they will reflect the effects of these uses in terms of workload and enrollment trends and ratios. Such reviews and updates help to insure that the process will not become cynical by speaking more to form than to substance.

Ultimately, of course, any resource allocation scheme is only as good and effective as the administration utilizing it. Because of changes in administrative officers and wholesale reorganizations over the past three years, the University of Houston Central Campus has not had that degree of stability essential to making any process both efficient and effective. However, based on its own experiences in attempting to utilize the model we have described, as well as those at other institutions developing similar ones, certain critical factors must be present for successful utilization to occur. Paramount among these is a commitment from the highest administrative levels to support the process development and to use its results in making budgetary decisions between competitive claims. If gamesmanship can be effective in overturning decisions, those who "play by the rules" are penalized and the process will quickly lose whatever legitimacy it has fostered.

It is also important that there be bottom-up understanding and participation in developing the model. While administrative tinkering may be used to "fine-tune" the model and its variables, the basic structure must have sufficient input - particularly from department levels - that it results in comparisons which are equitable to all, if not always serving the self-interests of some factions. Particularly with respect to the use of the concept of "centrality," and in the establishment of data measures to be used in evaluating departmental quality and

establishing or revising quality goals, departmental input is essential. In the end, of course, academic goals and priorities must be settled upon by the chief academic officer in consultation with other administrators. The rationale for these goals and priorities, however, should be influenced by faculty input.

Finally, while administrative judgment is an important balancing rod in making sensitive interpretations of the comparative needs identified by the model, the criteria upon which such judgments are based should be consistent, as should the measures which are utilized in distinguishing departments from one another. Nothing could be more devastating to the use of a model such as that proposed than to have the criteria and measures changed mid-stream. Perhaps the only thing worse would be to utilize no model at all, letting academic goals wither in deference to fiscal politics.

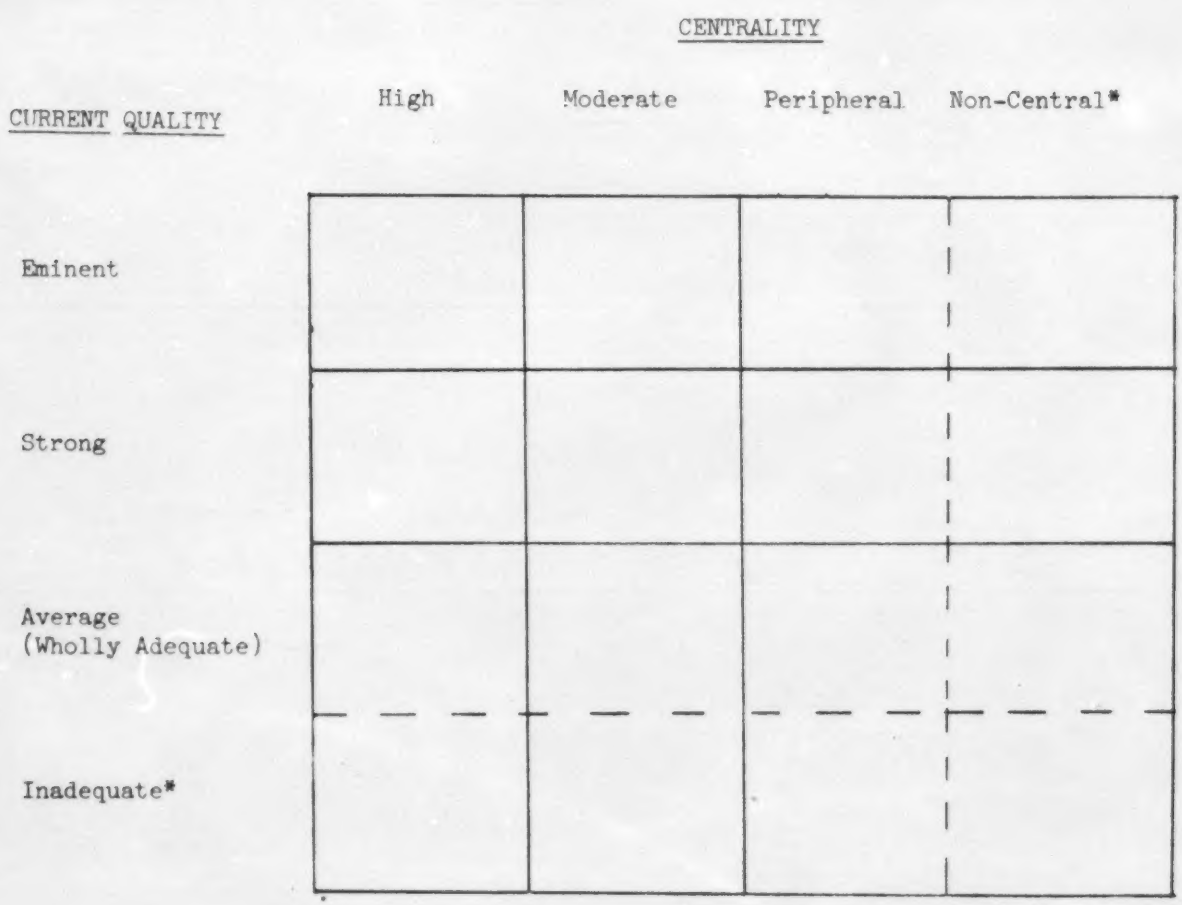
Exhibit 1

FACTORS CONSIDERED IN THE SELF-STUDY
PROGRAM EVALUATIONS

	Factor	Influencing...	Susceptibility to Rapid Change
1.	Degree of consistency with institutional role and scope	Centrality	Slight
2.	Degree of consistency with institutional goals	Centrality	Slight
3.	Centrality of program to College mission	Centrality	Slight
4.	Intellectual supportiveness of the program	Centrality	Slight
5.	Demand by non-majors for program courses	Centrality and Quality	Moderate
6.	Comparative advantage of the program	Centrality and Quality	Moderate to High
7.	Current quality of the faculty	Quality	Moderate
8.	Potential quality of the faculty	Quality	High
9.	Critical mass of quality faculty	Quality	High
10.	Demand by students to major in program	Quality	Slight to Moderate
11.	Demand for program graduates	Quality	Moderate to High
12.	Quality of student majors	Quality	Moderate to High
13.	Adequacy of library holdings	Quality	Slight to Moderate
14.	Adequacy of facilities and equipment	Quality	Slight to Moderate

Exhibit 2

Initial Matrix Based Upon
Self-Study Evaluations



*Recommended for program/department termination unless very specific, short-term changes could raise overall centrality or quality to the next-higher level.

Exhibit 3

Reduced Academic Priority Matrix
(Numbers of Departments)

QUALITY GOAL	CENTRALITY: High	Moderate	Peripheral	
Eminence	(4)	(2)	(1)	(7)
Strength	(5)	(5)	(6)	(16)
Adequacy	(3)	(9)	(16)	(28)
	(12)	(16)	(23)	51

Exhibit 4

Overlaid Matrix of Cost/Resource Need Designators

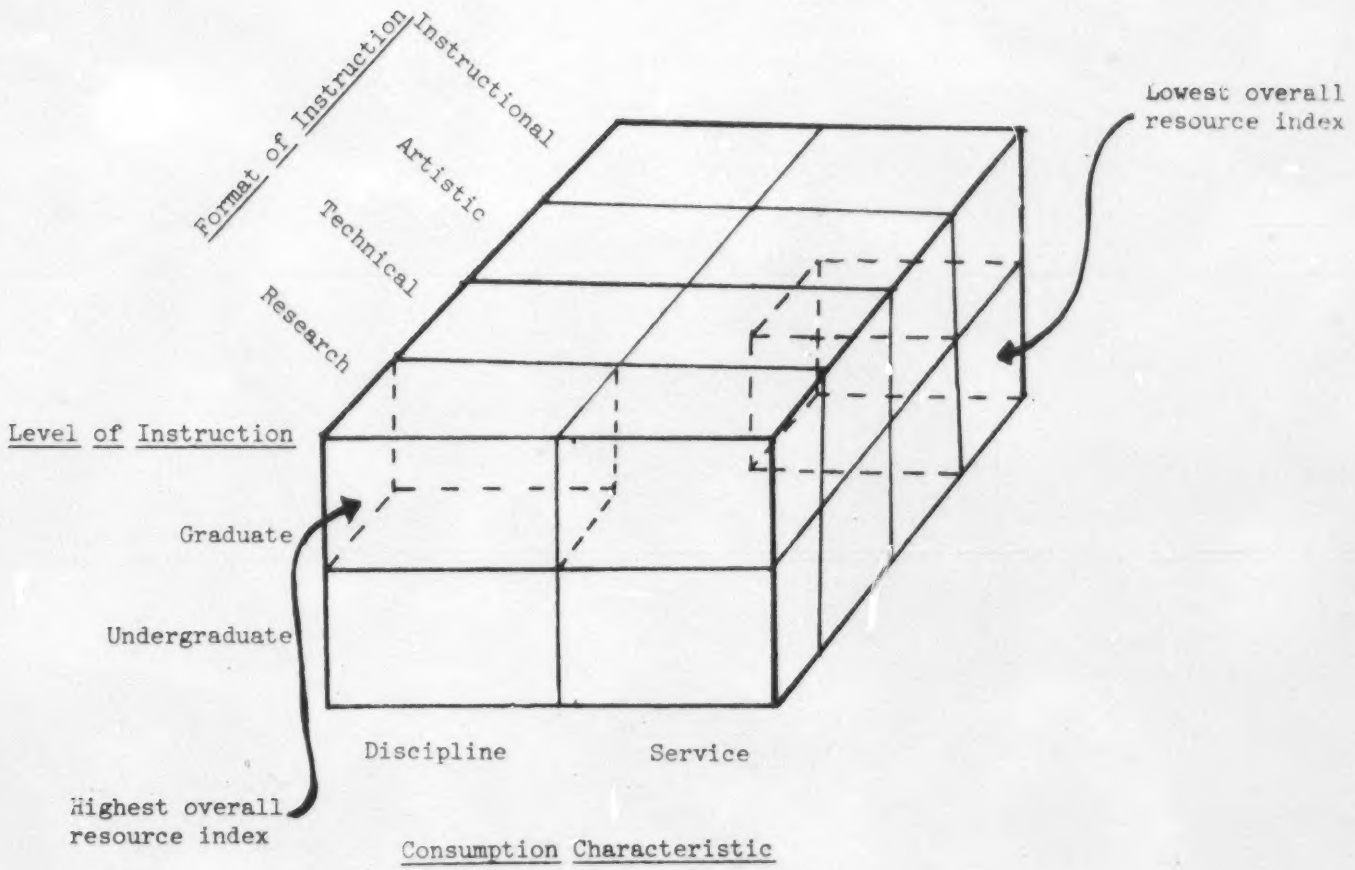


Exhibit 5

Academic Matrix With Numbers of Departments
Having Particular Cost/Resource Need Designators

QUALITY GOAL	CENTRALITY: High	Moderate	Peripheral
Eminence	1 U-S-A 1 U-S-R 2 G-D-R 4	1 U-D-I 1 U-D-R 2	1 U-S-I 1
Strength	1 U-S-I 1 U-S-R 1 U-D-R 1 G-S-I 1 G-D-I 5	1 U-S-I 1 U-S-T 1 U-D-A 2 U-D-R 5	2 U-D-I 1 U-D-A 1 U-D-T 2 G-D-I 6
Adequacy	3 U-S-I 3	5 U-S-I 1 U-D-I 2 U-D-A 1 G-D-T 9	4 U-S-I 5 U-D-I 3 U-D-T 3 G-D-I 1 G-D-T 16

Totals

Undergraduate	Graduate
15 U-S-I	1 G-S-I
1 U-S-A	0 G-S-A
1 U-S-T	0 G-S-T
2 U-S-R	0 G-S-R
9 U-D-I	6 G-D-I
4 U-D-A	0 G-D-A
4 U-D-T	2 G-D-T
4 U-D-R	2 G-D-R
40	11